

What is claimed:

1. A method for generating a report comprising:
defining a set of reporting components that can be assembled to form a report
template;
5 processing the reporting components of the report template to perform one or
more operations within a computing environment provided by a mathematical tool;
and
generating a report as a function of the processed reporting components.
- 10 2. The method of claim 1, wherein defining the set of reporting components includes
defining flow control components that control an order for processing the reporting
components.
- 15 3. The method of claim 1, wherein processing the reporting components includes bi-
directionally communicating with the computing environment.
- 20 4. The method of claim 1, wherein processing the reporting components includes issuing
instructions to the computing environment to modify operational parameters or initial
conditions of the model.
5. The method of claim 1, wherein processing the reporting components includes
reconfiguring the model by adding or removing a functional block from the model.
- 25 6. The method of claim 1, wherein processing the reporting components includes
requesting data from a calculation workspace of the computing environment.
7. The method of claim 1, wherein processing the reporting components includes
evaluating expressions defined within the computing environment.
- 30 8. The method of claim 1, wherein processing the reporting components includes
requesting data from a simulator.

9. The method of claim 1, wherein processing the reporting components includes requesting data from a graphics package.
- 5 10. The method of claim 1, wherein processing the reporting components includes issuing commands to the computing environment to simulate the model.
11. The method of claim 1, wherein processing the reporting components includes issuing commands to the simulator to advance a current state of the model simulator by one or more time steps.
- 10 12. The method of claim 1, wherein generating the report includes:
generating an intermediate representation of the report; and
transforming the intermediate representation into an electronic document according to a user-selected format.
- 15 13. The method of claim 12, wherein generating an intermediate representation of the report includes generating a report in one of the following formats: Extensible Markup Language or Standard Generalized Markup Language.
- 20 14. The method of claim 1, wherein generating the report includes formatting the report as a function of a state of the simulation.
- 25 15. The method of claim 1, wherein the reporting components can be hierarchically assembled to form the report.
- 30 16. The method of claim 15, wherein processing the reporting components includes processing each component according to behavior defined by ancestor component within the hierarchy.

17. The method of claim 1, wherein the reporting components are defined according to an object-oriented report programming language.
18. The method of claim 1, wherein the report template refers to a second report template, and further wherein the reporting components are processed as a function of results from processing the second report template.
19. A report generation computer program, tangibly stored on a computer-readable medium, for generating a report from a model simulation, the computer program comprising instructions operable to cause a programmable processor to:
- define a set of reporting components that can be assembled to form a report template;
 - process the reporting components of the report template to perform one or more operations within a computing environment provided by a mathematical tool;
 - and
 - generate a report as a function of the processed reporting components.
20. The computer program product of claim 19, wherein the computer program defines flow control components that control an order for processing the reporting components.
21. The computer program product of claim 19, wherein the report generation computer program facilitates bi-directional communication between the report generation computer program and the computing environment of the simulation tool.
22. The computer program product of claim 19, wherein the report generation computer program issues instructions to the computing environment to modify operational parameters or initial conditions of the model.

23. The computer program product of claim 19, wherein the report generation computer program reconfigures the model by adding or removing a functional block from the model.
- 5 24. The computer program product of claim 19, wherein the report generation computer program requests data from a calculation workspace of the computing environment.
25. The computer program product of claim 19, wherein the report generation computer program evaluates expressions defined within the computing environment.
- 10 26. The computer program product of claim 19, wherein the report generation computer program requests data from a simulator.
- 15 27. The computer program product of claim 19, wherein the report generation computer program requests data from a graphics package.
28. The computer program product of claim 19, wherein the report generation computer program issues commands to simulate the model.
- 20 29. The computer program product of claim 19, wherein the report generation computer program issues commands to a simulator to advance a current state of the model by one or more time steps.
- 25 30. The computer program product of claim 19, wherein the report generation computer program generates an intermediate representation of the report and transforms the intermediate representation into an electronic document according to a user-selected format.
- 30 31. The computer program product of claim 19, wherein the report generation computer program formats the report as a function of a state of the simulator.

32. The computer program product of claim 19, wherein the report generation computer program can be hierarchically assembled to form the report.

33. The computer program product of claim 19, wherein the report generation computer program defines the reporting components are defined according to an object-oriented report programming language.

34. The computer program product of claim 19, wherein the report generation computer program provides that the report template can reference on or more other report templates in sequence, and further wherein the results of processing one of the report templates is a function of the simulation results from processing report templates earlier in the sequence.

35. A system comprising a technical computing environment, a model simulator and a report generator executing within an operating environment provided by a computer, wherein the report generator defines a set of reporting components that can be assembled to form a report template, and further wherein the report generator includes a generation engine to processes the reporting components of the report template to extract data from the computing environment and the model simulator in order to generate a report.

36. The system of claim 35, wherein the set of reporting components includes flow control components that control an order in which the generation engine processes the reporting components.

37. The system of claim 35, wherein the generation engine bi-directionally communicates with the model simulator.

38. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to modify operational parameters or initial conditions of the model.

39. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to reconfigure the model by adding or removing a functional block from the model.

40. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to extract data from a calculation workspace of the computing environment.

41. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to evaluate expressions defined within the computing environment.

42. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to requesting data from the model simulator.

43. The system of claim 35, wherein the generation engine issues commands to the computing environment in order to request data from a graphics package.

44. The system of claim 35, wherein the generation engine issues commands to simulate the model.

45. The system of claim 35, wherein the generation engine issues commands to advance a current state of the simulated model one or more time steps.

46. The system of claim 35, wherein the generation engine generates the report in an intermediate representation, and wherein the report generator further comprises a transformation engine to transform the intermediate representation into an electronic document according to a user-selected format.

47. The system of claim 46, wherein the intermediate representation of the report is in one of the following formats: Extensible Markup Language or Standard Generalized Markup Language

5 48. The system of claim 35, wherein the generation engine formats the report as a function of a state of the simulation.

49. The system of claim 35, wherein the generation engine issuing instructions to the simulator to modify operational parameters or initial conditions of the model.

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50. The system of claim 35 and further including a user interface by which a designer can hierarchically arrange the reporting elements to form the report template.

15 51. The system of claim 35, wherein the report generator processes each component according to behavior defined by ancestor component within the hierarchy.

20 52. The system of claim 35, wherein the report generator defines according to an object-oriented report programming language.